TITLE OF THE INVENTION

DATA TRANSMISSION SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to data transmission systems and, more specifically, to a data transmission system in which a server transmits files for details of shops and/or services, typically restaurants, to a potential customer's data terminal equipment.

Description of the Background Art

[0002] In recent years, the above type of data transmission system has been realized using the Internet technology. FIG. 27A is a block diagram showing a conventional data transmission system *Sdtc*. In the data transmission system *Sdtc*, a WWW server 101 and data terminal equipment 102 are connected to each other via the Internet 103 for data communications therebetween. To the data terminal equipment 102, a printer 104 is connected.

[0003] The WWW server 101 stores several of a shop file *Fshop*, which is basically data about shop details and/or services (hereinafter, simply shop details) including a bonus coupon (see FIG. 27B) designed as the shop's owner wants. This bonus coupon is typically a discount coupon on meal charges.

[0004] The data terminal equipment 102 accesses the WWW server

101 through the Internet 103 responding to a user's operation, and retrieves the shop file *Fshop* designated by the user. The data terminal equipment 102 then displays on its screen the shop details in the shop file *Fshop*. By referring to the displayed shop details including coupon, if the user decides to go to the shop and wants to get the bonus offered by the coupon, he or she instructs the data terminal equipment 102 to print out the coupon. Responding to such an instruction, the shop file *Fshop* is transferred from the data terminal equipment 102 to the corresponding printer 104. The printer 104 then responsively prints out on paper the contents of the shop file *Fshop*, and resultantly outputted is a printed material *Pout* on which at least the coupon is printed as shown in FIG. 27B. The user brings the printed material *Pout* to the corresponding shop, and hands it to anyone working at the shop. It is not until that the user is entitled to receive the bonus.

[0005] The problem here is that, in such a data transmission system *Sdtc*, the user has to bother to print out any coupon whichever he or she wants, and bring it to the corresponding shop. Therefore, in terms of usability, the data transmission system *Sdtc* is not user friendly.

SUMMARY OF THE INVENTION

[0006] Therefore, an object of the present invention is to provide a data transmission system which can offer better

usability.

[0007] The present invention has the following features to attain the object above.

[0008] A first aspect of the present invention is directed to a data transmission system in which data communications is performed between first data terminal equipment placed on a bonus awarding side, and second data terminal equipment used by a user who is entitled to receive the bonus. The first data terminal equipment comprises a first bonus identifier storage for storing, as an internal bonus identifier, a bonus identifier provided to uniquely identify the bonus awarded to the second data terminal equipment. The second data terminal equipment comprises a bonus-attached file requesting part for requesting a bonus-attached file which is for the bonus, and including a bonus identifier which uniquely identifies the bonus; and a second bonus identifier storage for storing, as an external bonus identifier, the bonus identifier included in the bonus-attached file requested by the bonus-attached file requesting part. The first data terminal equipment further comprises a bonus identifier requesting part for requesting, through data communications with the second data terminal equipment, the external bonus identifier stored in the second bonus identifier storage; a determination part for determining whether or not the external bonus identifier requested by the bonus-identifier requesting part is the same as the internal bonus identifier stored in the first bonus identifier

storage; and a bonus awarding part for providing, when the determination part determines that the external bonus identifier as being the same as the internal bonus identifier, the second data terminal equipment with the bonus specified by the internal bonus identifier.

[0009] The second aspect of the present invention is directed to data terminal equipment connected with external data terminal equipment placed on a bonus awarding side for communications therewith, and used by a user who is entitled to receive the bonus. The external data terminal equipment stores, as an external bonus identifier, a bonus identifier provided to uniquely identify the bonus awarded to the data terminal equipment. The data terminal equipment comprises: a bonus-attached file requesting part for requesting a bonus-attached file which is for the bonus, and including a bonus identifier which uniquely identifies the bonus; and a bonus identifier storage for storing, as an internal bonus identifier, the bonus identifier included in the bonus-attached file requested by the bonus-attached file requesting part. The external data terminal equipment requests, through data communications with the second data terminal equipment, the internal bonus identifier stored in the second bonus identifier storage; determines whether or not the internal bonus identifier requested by the bonus-identifier requesting part is the same as the external bonus identifier stored in itself, and provides, when the internal bonus identifier is determined as being the same as

the external bonus identifier, the data terminal equipment with the bonus specified by the internal bonus identifier.

[0010] A third aspect of the present invention is directed to data terminal equipment connected with external data terminal equipment used by a user who is entitled to receive the bonus for data communications therewith. The data terminal equipment comprises a bonus identifier storage for storing, as an internal bonus identifier, a bonus identifier provided to uniquely identify the bonus awarded to the external data terminal equipment. The external data terminal equipment requests for a bonus-attached file which is for the bonus, and including a bonus identifier which uniquely identifies the bonus, and stores, as an external bonus identifier, the bonus identifier included in the requested bonus-attached file. The data terminal equipment further comprises: a bonus identifier requesting part for requesting the external bonus identifier stored in the external bonus identifier storage; a determination part for determining whether or not the external bonus identifier requested by the bonus-identifier requesting part is the same as the internal bonus identifier stored in the first bonus identifier storage; and a bonus awarding part for providing, when the determination part determines that the external bonus identifier as being the same as the internal bonus identifier, the external data terminal equipment with the bonus specified by the internal bonus identifier.

[0011] These and other objects, features, aspects and advantages of the present invention will become more apparent from the following detailed description of the present invention when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] FIG. 1 is a block diagram showing the structure of a data transmission system Sdt_1 according to a first embodiment of the present invention, or as its modified example, of a data transmission system Sdt_1';

FIG. 2 is a block diagram showing the structure of a WWW server 1_1 of FIG. 1;

FIGS. 3A and 3B are schematic illustrations, respectively, of form data *Dform1* and a bonus-attached file *Fbonus1* to be used in the data transmission system Sdt_1 of FIG. 1;

FIG. 4 is a block diagram showing the structure of data terminal equipment 2_1 of FIG. 1;

FIG. 5 is a block diagram showing the structure of data terminal equipment 3_1 of FIG. 1;

[0013] FIG. 6 is a sequence chart for data communications between the WWW server 1_1 and the data terminal equipment 2_1 of FIG. 1;

FIG. 7 is a sequence chart for data communications between the WWW server 1_1 and the data terminal equipment 3_1 of

FIG. 1;

FIG. 8 is a sequence chart for data communications between the WWW server 2_1 and the data terminal equipment 3_1 of FIG. 1;

FIG. 9 is a schematic exemplary illustration specifically showing items *ITname*, *ITinfo*, *ITcob*, and *ITiob* shown in FIG. 3A;

FIG. 10 is a sequence chart for data communications between the WWW server 1_1 and the data terminal equipment 2_1 in the data transmission system Sdt_1' of FIG. 1;

[0014] FIG. 11 is a block diagram showing the structure of a data transmission system Sdt_2 according to a second embodiment of the present invention;

FIG. 12 is a block diagram showing the structure of data terminal equipment 2_2 of FIG. 11;

FIG. 13 is a block diagram showing the structure of data terminal equipment 3_2 of FIG. 11;

FIG. 14A is a block diagram showing the structure of a center station 6_2 of FIG. 11, and FIG. 14B is a schematic illustration showing the detailed structure of a personal database *DBuser* of FIG. 14A;

FIG. 15 is a sequence chart for data communications between the data terminal equipment 2_2 and the data terminal equipment 3_2 of FIG. 11;

[0015] FIG. 16 is a sequence chart for data communications

between the data terminal equipment 2_2 and the center station 6_2 of FIG. 11;

FIG. 17 is a block diagram showing the structure of a data transmission system Sdt_3 according to a third embodiment of the present invention;

FIG. 18 is a block diagram showing the structure of a WWW server 1_3 of FIG. 17;

FIG. 19A is a schematic illustration of an input form *Fin3* represented by form data *Dform3* of FIG. 18, and FIG. 19B is a schematic illustration showing an input example of items *ITname*, *ITaddr*, and *ITnote* shown in FIG. 19A;

FIGS. 20A and 20B are schematic illustrations, respectively, of shop details *INshop3* in a bonus-attached file *Fbonus3* of FIG. 18, and the data structure of the bonus-attached file *Fbonus3*;

[0016] FIGS. 21A and 21B show, respectively, a conversion table *Tconv31* of FIG. 18 and a conversion table *Tconv32* of FIG. 22;

FIG. 22 is a block diagram showing the structure of data terminal equipment 3_3 of FIG. 17;

FIG. 23 is a sequence chart for data communications between the WWW server 1_3 and the data terminal equipment 2_1 of FIG. 17;

FIG. 24 is a sequence chart for data communications between the WWW server 1_3 and the data terminal equipment 3_3 of

FIG. 17;

FIG. 25 is a flowchart of the detailed procedure of sequence SQ59 of FIG. 24;

[0017] FIG. 26 is a flowchart of the detailed procedure of sequence SQ60 of FIG. 24; and

FIGS. 27A and 27B are illustrations for describing a conventional data transmission system *Sdtc*.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIG. 1 is a block diagram showing the structure of a data transmission system Sdt_1 according to a first embodiment of the present invention. The data transmission system Sdt_1 roughly includes a WWW (World Wide Web) server 1_1, data terminal equipment 2_1, and data terminal equipment 3_1. Herein, the WWW server 1_1, and the data terminal equipment 2_1 and 3_1 are so structured as to be accessible to the Internet 4_1. With such a structure, at least the WWW server 1_1 can perform data communications with the data terminal equipment 2_1 and 3_1 over the Internet 4_1. Moreover, the data terminal equipment 2_1 and 3_1 can perform data communications therebetween over a wireless transmission path 5_1.

[0018] The WWW server 1_1 is managed by an information provider, who stores a bonus-attached file *Fbonus1* (see FIG. 3B) in the WWW server 1_1 responding to a request from the shop, and by using the bonus-attached file *Fnonus1*, provides the shop details to the user. The WWW server 1_1 includes, as shown in FIG. 2, a CPU (Central

Processing Unit) 11_1, ROM (Read Only Memory) 12_1, RAM (Random Access Memory) 13_1, a form data storage 14_1, a bonus-attached file storage 15_1, and a communications controller 16_1. The CPU 11_1 goes through various processes by following a computer program (hereinafter, simply refers to as a program) *Psrvr* which is previously recorded on the ROM 12_1. When executing the program *Psrvr*, the CPU 11_1 uses the RAM 13_1 as a working area. The form data storage 14_1 is typically composed of a hard disk drive, and stores form data *Dform1* (see FIG. 3A) in a storage location specified by a predetermined first URL (Uniform Resource Locator). The bonus-attached file storage 15_1 stores a bonus-attached file *Fbonus1* (see FIG. 3B) in a storage location specified by a predetermined second URL. The bonus-attached file storage 15_1 also stores a base file *Fbase1* in a predetermined storage location. The base file *Fbase1* represents the background of the bonus-attached file *Fbonus1*, and is used when the WWW server 1_1 creates the bonus-attached file *Fbonus1* (see sequence SQ8 of FIG. 6). Here, the base file *Fbase1* is used only by the WWW server 1_1, and thus there is no need to assign a URL to indicate where the base file *Fbase1* has been stored. In accordance with the Internet protocol, the communications controller 16_1 sends out various data transferred from the RAM 13_1 to the Internet 4_1, or receives various data transmitted over the Internet 4_1 and transfers the data to the RAM 13_1.

[0019] Described now are the above described form data *Dform1*

and the bonus-attached file *Fbonus1*. With the form data *Dform1*, such an input form *Fin1* as shown in FIG. 3A can be displayed at least by the data terminal equipment 2_1. The input form *Fin1* is so structured as to allow someone working in the shop (typically shopkeeper or his or her employees) using the data terminal equipment 2_1 to fill out items *IT*, which are needed to create the bonus-attached file *Fbonus1*. In the below, anyone working in the shop is simply referred to as a shopkeeper for convenience. As to the items *IT*, to be filled out in the present embodiment are four of those *ITname*, *ITinfo*, *ITcob*, and *ITiob* selected by the information provider. Specifically, the item *ITname* is a shop name, and the item *ITinfo* is shop information, including a shop address, a phone number, or a map around the shop, or at least two of those. The item *ITcob* is details of a bonus, which denotes herein a merit awarded specially to the user who becomes the customer of the shop. The item *ITiob* is a bonus identifier *IDbonus* for uniquely identifying the bonus. With these four items *IT* selected, the input form *Fin1* is structured by four input columns *Cname*, *Cinfo*, *Ccob*, and *Ciob*. The shopkeeper using the data terminal equipment 2_1 fills out those input columns with, respectively, a shop name (item *ITname*), shop information (item *ITinfo*), bonus details (item *ITcob*), and the corresponding bonus identifier *IDbonus* (item *ITiob*).

[0020] The input form *Fin1* has a transmission button *Btx1*, a function assigned to which is of transmitting the items *ITname*,

ITinfo, *ITcob*, and *ITiob* filled out in the input columns *Cname*, *Cinfo*, *Ccob*, and *Ciob* to the WWW server 1_1. The transmission button *Btx1* is clicked by the shopkeeper using the data terminal equipment 2_1. When the transmission button *Btx1* is clicked, the data terminal equipment 2_1 responsively transmits, to the WWW server 1_1, item data *Ditem1* (see FIG. 6) including those inputted items *ITname*, *ITinfo*, *ITcob*, and *ITiob*.

[0021] Described next is the bonus-attached file *Fbonus1*, which is created by the WWW server 1_1 using the item data *Ditem1* and base data *Dbase1*. With the bonus-attached file *Fbonus1*, such shop details *INshop1* as shown in FIG. 3B can be displayed at least on the data terminal equipment 3_1 side. The bonus-attached file *Fbonus1* herein represents a shop name (item *ITname*), shop information (item *ITinfo*), bonus details (item *ITcob*), and the corresponding bonus identifier *IDbonus* (Item *ITiob*).

[0022] Refer back to FIG. 1. The data terminal equipment 2_1 is an information device which is placed on the shop side, and operated by the shopkeeper. The data terminal equipment 2_1 includes, as shown in FIG. 4, a CPU 21_1, ROM 22_1, RAM 23_1, an input unit 24_1, an output unit 25_1, a bonus identifier storage 26_1, a first communications controller 27_1, and a second communications controller 28_1. The CPU 21_1 goes through various processes by following a computer program (hereinafter, simply a program) *Psdte* which is previously recorded on the ROM 22_1. When executing the program *Psdte*, the CPU 21_1 uses the RAM 23_1 as a working area.

The input unit 24_1 is typically composed of both a keyboard and a mouse, and therethrough, commands and data are inputted into the data terminal equipment 2_1. The output unit 25_1 typically includes a display, and externally outputs a processing result of the CPU 21_1 as images. The bonus identifier storage 26_1 is typically composed of a hard disk drive, and stores the above described bonus identifier *IDbonus*. In accordance with the Internet protocol, the first communications controller 27_1 sends out various data transferred from the RAM 23_1 to the Internet 4_1, or receives various data transmitted over the Internet 4_1 and transfers the data to the RAM 23_1. Since often immovably placed in the shop, the data terminal equipment 2_1 is preferably accessible to the Internet 4_1 using digital subscriber lines, for example. In accordance with the standard for the predetermined short-range wireless communications, the second communications controller 28_1 sends out various data transferred from the RAM 23_1 to the wireless transmission path 5_1, or receives various data transmitted over the wireless transmission path 5_1 and transfers the data to the RAM 23_1. Here, the typical standard for wireless communications is Bluetooth.

[0023] The data terminal equipment 3_1 is an information device typified by PDAs (Personal Digital Assistants), navigation devices, or mobile phones, and structured as being carried along by the user, i.e., the shop customer. The data terminal equipment 3_1 includes, as shown in FIG. 5, a CPU 31_1, ROM 32_1, RAM 33_1, an

input unit 34_1, an output unit 35_1, a bonus identifier storage 36_1, a first communications controller 37_1, and a second communications controller 38_1. The CPU 31_1 goes through various processes by following a computer program (hereinafter, simply a program) *Pudte* which is previously recorded on the ROM 32_1. When executing the program *Pudte*, the CPU 31_1 uses the RAM 33_1 as a working area. The input unit 34_1 is typically composed of a pen or a keyboard, and therethrough, commands and data are inputted into the data terminal equipment 3_1. The output unit 35_1 typically includes a display, and externally outputs a processing result of the CPU 31_1 as images. The bonus identifier storage 36_1 is typically composed of a hard disk drive, and stores the above described bonus identifier *IDbonus*. In accordance with the Internet protocol, the first communications part 37_1 sends out various data transferred from the RAM 33_1 to the Internet 4_1, or receives various data transmitted over the Internet 4_1 and transfers the data to the RAM 33_1. Here, the first communications controller 37_1 is preferably structured as to be accessible to the Internet 4_1 using mobile phones or public telephones for ISDN (Integrated Service Digital Network) because the data terminal equipment 3_1 is carried along by the user. The second communications controller 38_1 sends out, in accordance with the same standard as the second communications controller 28_1 for the short-range wireless communications, various data transferred from the RAM 33_1 to the wireless transmission path 5_1, or transfers

various data transmitted over the wireless transmission path 5_1 to the RAM 33_1.

[0024] Referring to FIGS. 6 to 8, described next is data communications performed in the data transmission system Sdt_1. Referring to FIG. 6, described first is data communications between the WWW server 1_1 and the data terminal equipment 2_1. In FIG. 6, the shopkeeper operates the data terminal equipment 2_1 to request the information provider to create and store a bonus-attached file *Fbonus1* for his or her shop. At the time of such a request, the CPU 21_1 executes a process written in the program *Psdte* responding to the shopkeeper's operation. More in detail, the CPU 21_1 first accesses the Internet 4_1 (sequence SQ1).

[0025] Then, the shopkeeper enters the first URL through operation of the input unit 24_1. The CPU 21_1 responsively generates on the RAM 23_1 a request *RSfd1* including the first URL, and transfers it to the first communications controller 27_1. Here, the request *RSfd1* is a signal for requesting the WWW server 1_1 to transmit the form data *Dform1* to the data terminal equipment 2_1. The first communications controller 27_1 sends out thus received request *RSfd1* onto the Internet 4_1. In such a manner, a request is made for the form data *Dform1* (sequence SQ2).

[0026] The request *RSfd1* is forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_1, and then transferred to the RAM 13_1. After the request *RSfd1* is stored in the RAM 13_1, the CPU 11_1 executes a process written in the program

PSrvr. To be specific, the CPU 11_1 extracts the first URL from the request *RSfd1* on the RAM 13_1, and then from the storage location of the form data storage 14_1 which is specified by the first URL, reads the form data *Dform1* onto the RAM 13_1. Then, the CPU 11_1 transfers the form data *Dform1* on the RAM 13_1 to the communications controller 16_1. The communications controller 16_1 sends out the form data *Dform1* onto the Internet 4_1 (sequence SQ3).

[0027] The form data *Dform1* is forwarded over the Internet 4_1 to the first communications controller 27_1 in the data terminal equipment 2_1, and then transferred to the RAM 23_1. The CPU 21_1 transfers the form data *Dform1* on the RAM 23_1 to the output unit 25_1. The output unit 25_1 performs a display process in accordance with the received form data *Dform1* so as to display on its screen such an input form *Fin1* as shown in FIG. 3A (sequence SQ4).

[0028] After the input form *Fin1* is displayed, the shopkeeper operates the input unit 24_1 to fill out the input columns *Cname*, *Cinfo*, *Ccob*, and *Ciob* with, respectively, the shop name (item *ITname*), the shop information (item *ITinfo*), the bonus details (item *ITcob*), and the corresponding bonus identifier *IDbonus* (item *ITiob*). As exemplarily shown in FIG. 9, the shopkeeper herein presumably fills out the input column *Cname* with the shop name "pub X", attaches a map image around the pub X to the input column *Cinfo* as shop information, fills out the input column *Ccob* with "20% OFF on meal charges" as bonus details, and fills out the input column *Ciob* by "yyyy" as the bonus identifier *IDbonus*.

After completely filling out the input form *Fin1* as such, the shopkeeper clicks the transmission button *Btx1* through the input unit 24_1. Then, the CPU 21_1 creates the item data *Ditem1* including those inputted items *ITname*, *ITinfo*, *ITcob*, and *ITiob* on the RAM 23_1 (sequence SQ5).

[0029] Then, the CPU 21_1 stores the inputted bonus identifier *IDbonus* to the bonus identifier storage 26_1 (sequence SQ6). Here, the bonus identifier *IDbonus* stored in sequence SQ6 is referred to as an internal bonus identifier *IDbonus'* in the below. The internal bonus identifier *IDbonus'* is used in sequence SQ22 which will be later described, so that details thereof are left for later description. Here, the timing for sequence SQ6 is not restrictive as long as being carried out after the bonus identifier *IDbonus* is entered by the shopkeeper, and before sequence SQ22 is carried out. In the above presumption, stored in sequence SQ6 is yyyy (see FIG. 9).

[0030] Next, the CPU 21_1 transfers the item data *Ditem1* on the RAM 23_1 to the first communications controller 27_1, from which the item data *Ditem1* is sent out onto the Internet 4_1 (sequence SQ7).

[0031] The item data *Ditem1* is forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_1, and then transferred to the RAM 13_1. Then, the CPU 11_1 creates a bonus-attached file *Fbonus1* (sequence SQ8). To be more specific, the CPU 11_1 reads the base file *Fbase1* to the RAM 13_1 from the

bonus-attached file storage 15_1. Then, the CPU 11_1 arranges the items *ITname*, *ITinfo*, *ITcob*, and *ITiob* included in the item data *Ditem1* onto each predetermined position on the background represented by the base file *Fbase1*. In this manner, the bonus-attached file *Fbonus1* is created. Assuming that the items *ITname*, *ITinfo*, *ITcob*, and *ITiob* are those shown in FIG. 9, the bonus-attached file *Fbonus1* will be the one shown in FIG. 3B.

[0032] Then, the CPU 11_1 allocates the second URL to the bonus-attached file *Fbonus1* on the RAM 13_1, and then to the storage location of the bonus-attached file storage 15_1 specified by the second URL, stores the bonus-attached file *Fbonus1* (sequence SQ9). This allows the user's data terminal equipment 3_1 to request the bonus-attached file *Fbonus1* in sequence SQ14 of FIG. 7.

[0033] After creating a storage completion acknowledgement *ASsc1*, the CPU 11_1 transfers it to the communications controller 16_1. Here, the storage completion acknowledgement *ASsc1* is a signal including a message telling that the bonus-attached file *Fbonus1* is now stored in the bonus-attached file storage 15_1, and is forwarded to the data terminal equipment 2_1. The communications controller 16_1 sends out thus received storage completion acknowledgement *ASsc1* onto the Internet 4_1 (sequence SQ10).

[0034] The storage completion acknowledgement *ASsc1* is forwarded over the Internet 4_1 to the first communications controller 27_1 in the data terminal equipment 2_1, and then

transferred to the RAM 23_1. The CPU 21_1 transfers the storage completion acknowledgement *ASsc1* thus stored in the RAM 23_1 to the output unit 25_1. The output unit 25_1 executes a display process in accordance with the received storage completion acknowledgement *ASsc1*, and then displays on its screen the message included therein (sequence SQ11). This makes the shopkeeper acknowledge that his or her request is now processed by the information provider, i.e., the WWW server 1_1. Then, the CPU 21_1 cuts off access to the Internet 4_1 (sequence SQ12).

[0035] In the above embodiment, sequences SQ1 to SQ12 are presumed to be gone through successively for convenience. This is not restrictive, and after sequence SQ7 is through, the CPU 21_1 may cut off access to the Internet 4_1. This is because it may take time to create the bonus-attached file *Fbonus1*, and if so, the shopkeeper may have to wait long, and may be charged for extra communications expenses. If this is the case, the WWW server 1_1 preferably transmits an e-mail including the same message as in the storage completion acknowledgement *ASsc1* to the data terminal equipment 2_1. The shopkeeper thus can read the message whenever convenient, thereby shortening waiting time and reducing communications expenses.

[0036] Referring to FIG. 7, described next is data communications between the WWW server 1_1 and the data terminal equipment 3_1. Through operation of the data terminal equipment 3_1, the user browses the bonus-attached file *Fbonus1* stored in

the WWW server 1_1. During such browsing, the CPU 31_1 executes a process written in the program *Pudte* responding to the user's operation. More specifically, the CPU 31_1 accesses the Internet 4_1 (sequence SQ13).

[0037] Then, the user operates the input unit 34_1 to enter the second URL. The CPU 31_1 generates on the RAM 33_1 a request *RSsd1* including the second URL, and transfers it to the first communications controller 37_1. Here, the request *RSsd1* is a signal for requesting the WWW server 1_1 to forward the bonus-attached file *Fbonus1* to the data terminal equipment 3_1. The first communications controller 37_1 sends out the received request *RSsd1* onto the Internet 4_1. As such, a request is made for the bonus-attached file *Fbonus1* (sequence SQ14).

[0038] The request *RSsd1* is forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_1, and then transferred to the RAM 13_1. After the request *RSsd1* is stored in the RAM 13_1, the CPU 11_1 executes a process written in the program *Psrvr*. To be specific, the CPU 11_1 extracts the second URL from the request *RSsd1* on the RAM 13_1, and from the storage location of the bonus-attached file storage 15_1 specified by the second URL, reads the bonus-attached file *Fbonus1* onto the RAM 13_1. Then, the CPU 11_1 transfers the bonus-attached file *Fbonus1* on the RAM 13_1 to the communications controller 16_1, from which the received bonus-attached file *Fbonus1* is sent out onto the Internet 4_1 (sequence SQ15).

[0039] The bonus-attached file *Fbonus1* is forwarded over the Internet 4_1 to the first communications controller 37_1 in the data terminal equipment 3_1, and then transferred to the RAM 33_1. The CPU 31_1 then transfers the bonus-attached file *Fbonus1* on the RAM 33_1 to the output unit 35_1. The output unit 35_1 executes a display process in accordance with the received bonus-attached file *Fbonus1*, and displays on its screen an image representing the shop details *INshop1* (sequence SQ16). In this manner, the shop details *INshop1* becomes available for the user to browse. Here, in the present embodiment, the user is assumed to browse the one shown in FIG. 3B.

[0040] After sequence SQ16, if the user decides to go to the displayed shop, and if he or she wants to get the bonus offered by the shop, the user operates the input unit 34_1 to instruct as such. In response, the CPU 31_1 stores the bonus identifier *IDbonus* included in the bonus-attached file *Fbonus1* on the RAM 33_1 into the bonus identifier storage 36_1 (sequence SQ17). Here, the bonus identifier *IDbonus* thus stored in sequence SQ17 is now referred to as an external bonus identifier *IDbonus"*. The external bonus identifier *IDbonus"* is used in sequence SQ22 which will be described later, and thus is not described in detail here. In this example, the external bonus identifier *IDbonus"* this time is yyyy (see FIG. 3B).

After sequence SQ17 is through, the CPU 21_1 cuts off access to the Internet 4_1 (sequence SQ18).

[0041] After sequence SQ18, the user carries the data terminal equipment 3_1 with him or her to get services from the target shop, and/or make purchases thereat. Here, the target shop is the one displayed in sequence SQ16. In the present embodiment, it is assumed that the target shop is the pub X shown in the shop details *INshop1* of FIG. 3B. The user receives the bonus displayed in sequence SQ16 from the target shop. To receive the bonus, such data communications as shown in FIG. 8 is performed between the data terminal equipment 2_1 and 3_1.

[0042] In FIG. 8, the CPU 21_1 in the data terminal equipment 2_1 executes a process written in the program *Psdte* responding to the shopkeeper's operation. In detail, the CPU 21_1 establishes a connection with the data terminal equipment 3_1 in accordance with the standard for the short-range wireless communications (sequence SQ19). After such a connection establishment, the CPU 31_1 on the data terminal equipment 3_1 side executes a process written in the program *Pudte*.

[0043] Then, the CPU 21_1 generates a request *RSiob* on the RAM 33_1, and transfers it to the second communications controller 28_1. Here, the request *RSiob* is a signal for requesting the data terminal equipment 3_1 to transmit the external bonus identifier *IDbonus"* to the data terminal equipment 2_1. The second communications controller 28_1 sends out the received request *RSiob* onto the wireless transmission path 5_1. As such, a request is made for the bonus identifier (sequence SQ20).

[0044] The request *RSiob* is forwarded over the wireless transmission path 5_1 to the second communications controller 38_1 in the data terminal equipment 3_1, and then transferred to the RAM 33_1. After the request *RSiob* is stored in the RAM 33_1, the CPU 31_1 reads the external bonus identifier *IDbonus"* from the bonus identifier storage 36_1 onto the RAM 33_1. Then, the CPU 31_1 transfers the external bonus identifier *IDbonus"* on the RAM 33_1 to the second communications controller 38_1, from which the received external bonus identifier *IDbonus"* is sent out onto the wireless transmission path 5_1 (sequence SQ21).

[0045] The external bonus identifier *IDbonus"* is forwarded over the wireless transmission path 5_1 to the second communications controller 28_1 in the data terminal equipment 2_1, and then transferred to the RAM 23_1. Then, the CPU 21_1 reads the internal bonus identifier *IDbonus'* from the bonus identifier storage 26_1 onto the RAM 23_1. Here, the timing for reading the internal bonus identifier *IDbonus'* is not restrictive as long as it is after sequence SQ19, and before sequence SQ22. As such, the RAM 23_1 stores both the internal and external bonus identifiers *IDbonus'* and *IDbonus"*. The CPU 21_1 determines whether the external bonus identifier *IDbonus"* is the same as the internal bonus identifier *IDbonus'* (sequence SQ22).

[0046] When the external bonus identifier *IDbonus"* is the same as the internal bonus identifier *IDbonus'*, the CPU 21_1 determines that the user is the one visiting the shop due to the shop details

INshop1, and the procedure goes to sequence SQ23. Then, the CPU 21_1 executes a process of awarding the bonus to the user (sequence SQ23). In the present embodiment, the user is assumed as visiting the shop due to the shop details *INshop1* of FIG. 3B, the external bonus identifier *IDbonus"* stored in the data terminal equipment 3_1 is yyyy. Also, the target shop is assumed as being the one in the shop details *INshop1* of FIG. 3B, and thus the internal bonus identifier *IDbonus'* stored in the data terminal equipment 2_1 is yyyy. Accordingly, the user gets a bonus of 20% OFF on meal charges. In sequence SQ23, specifically, the CPU 21_1 has the output unit 25_1 displayed the resultant 20% deducted amount of charge. The shopkeeper accordingly charges the user for the amount displayed on the display 25_1.

After sequence SQ23 is through, the CPU 21_1 cuts off the connection with the data terminal equipment 3_1 (sequence SQ24).

[0047] Refer to sequence SQ22 again. In the case where the external bonus identifier *IDbonus"* is not the same as the internal bonus identifier *IDbonus'*, the CPU 21_1 determines that the user is not the one visiting the shop due to the shop details *INshop1*, and thus sequence SQ23 is skipped and SQ24 is carried out. In other words, the CPU 21_1 does not give the bonus to the user.

[0048] From the viewpoint of bonus award only to the users visiting the shop due to the shop details *INship1*, it is more preferable for the CPU 21_1 to go through sequence SQ23 only when

the external bonus identifier *IDbonus"* is the same as the internal bonus identifier *IDbonus'*.

[0049] As such, in the data transmission system Sdt_1, the bonus-attached file *Fbonus1* includes a bonus identifier *IDbonus*, which is stored in sequence SQ6 into the data terminal equipment 2_1 on the shop side as the internal bonus identifier *IDbonus'*, and stored in sequence SQ17 into the user's data terminal equipment 3_1 as the external bonus identifier *IDbonus"*. When the user visits the shop, the data terminal equipment 2_1 receives the external bonus identifier *IDbonus"* from the data terminal equipment 3_1, and if determines it as being the same as the internal bonus identifier *IDbonus'* stored therein, gives the user the bonus in the bonus-attached file *Fbonus1*. Accordingly, the user has no more need to print out coupons, and in this respect, the data transmission system Sdt_1 realizes better usability than the conventional.

[0050] Note that, in the first embodiment, the bonus is exemplified by 20% OFF on meal charges. This is not restrictive, and the bonus may be points to be provided according to the amount of charge. In such a case, the data terminal equipment 2_1 or 3_1 calculates the user's points in total, and the shop correspondingly provides the user with gifts or service. Such a point service is also applicable to second and third embodiments in the below.

[0051] In the first embodiment, the bonus-attached file

Fbonus1 is specifically for a pub. However, any other shops and facilities whichever the user can visit are surely possible to be included in the bonus-attached file *Fbonus1*.

[0052] Here, the bonus-attached file *Fbonus1* may be assigned with at least a bonus and the corresponding bonus identifier *IDbonus*, by which the location where the bonus is available is indicated. The bonus-attached file *Fbonus1* may also include some other types of information. For example, if the bonus-attached file *Fbonus1* is the one for a boutique, any information relating to sales to be held thereat may be additionally included, or for a vacationland, any information about their event schedule, and if for any user gathering facilities such as movie theaters, any information about the crowding level or the waiting time. Also, the bonus-attached file *Fbonus1* may include menu information or bonuses of any specific celebrity's favorite restaurants, or sale information or bonuses of any specific boutiques. This is also applicable to the second and third embodiments in the below.

[0053] In the first embodiment, the data terminal equipment 2_1 and 3_1 exemplarily perform data communications using the wireless transmission path 5_1. This is not restrictive, and a wired transmission path, e.g., USB (Universal Serial Bus) cable, may be used for the purpose. Alternatively, the Internet 4_1 may be used for data communications of FIG. 8 between the data terminal equipment 2_1 and 3_1. This is also applicable to the second and third embodiments below.

[0054] In the above, the data terminal equipment 3_1 exchanges the external bonus identifier *IDbonus"* with the data terminal equipment 2_1 through the wireless transmission path 5_1 (sequences SQ21 and SQ22 of FIG. 8). Alternatively, the following manner is also possible for such an exchange. That is, the data terminal equipment 2_1 and 3_1 are each provided with a card memory slot of the same standard. Here, the card memory is typified by an SD Card™, Smartmedia™, or a MemoryStick™. The data terminal equipment 3_1 uses the card memory whichever inserted into its slot as the bonus identifier storage 36_1, in which the external bonus identifier *IDbonus"* is stored. Such a card memory is extracted from the slot on the data terminal equipment 3_1 in the shop, and inserted into the slot on the data terminal equipment 2_1. After the card memory is inserted into the slot on the data terminal equipment 2_1, the CPU 21_1 responsively reads from the memory the external bonus identifier *IDbonus"* to the RAM 23_1. This is also applicable to the second and third embodiments in the below.

[0055] In the first embodiment, the WWW server 1_1 exemplarily performs data communications with the data terminal equipment 2_1 and 3_1 over the Internet 4_1 (see FIGS. 6 and 7). However, any other networks as LAN (Local Area Network) may be used for the data communications. That is, the bonus-attached file *Fbonus1* may be stored not only in the WWW server 1_1 but in any different type of servers. This is also applicable to the second and third embodiments in the below.

[0056] Also, in the above, the WWW server 1_1 exemplarily stores the bonus-attached file *Fbonus1*. However, the data terminal equipment 2_1 may be provided with a function of the WWW server 1_1 for storing and transmitting the bonus-attached file *Fbonus1* to the data terminal equipment 3_1. This is also applicable to the second and third embodiments in the below.

[0057] In the first embodiment, a single data terminal equipment 2_1 is presumed for convenience to perform both data communications of FIGS. 6 and 8. This is not restrictive, and two of the data terminal equipment 2_1 physically differed from each other may be provided, and one may be in charge of data communications of FIG. 6, and the other data communications of FIG. 8.

[0058] In the above, included in the bonus-attached file *Fbonus1* is exemplarily a bonus and a bonus identifier *IDbonus* specifying the bonus. However, the bonus-attached file *Fbonus1* may include a plurality of bonuses, and a plurality of bonus identifiers *IDbonus* for each uniquely specifying the bonuses. Here, if included in the bonus-attached file *Fbonus1* is a single bonus, a URL may be used as the bonus identifier *IDbonus* because the bonus-attached file *Fbonus1* and the bonus uniquely correspond to each other. This is also applicable to the second and third embodiments in the below.

[0059] In the above first embodiment, the bonus-attached file *Fbonus1* is created by the WWW server 1_1 using the items *IT* forwarded

from the data terminal equipment 2_1. Alternatively, the bonus-attached file *Fbonus1* may be created as below. That is, the shopkeeper may create a draft of the shop details *INshop1* for his or her shop, and passes it to the information provider. Based on the draft, the information provider creates the bonus-attached file *Fbonus1* representing the shop details *INshop1* using a personal computer, for example, and uploads it to their WWW server 1_1. In this case, there is no need for data communications as shown in FIG. 6. Further, the shopkeeper hands the draft directly to the information provider not over the Internet 4_1, and as a result, the shopkeeper operates the data terminal equipment 2_1 less often. This is also applicable to the second and third embodiments in the below.

[0060] In the case where the bonus-attached file *Fbonus1* is created as above, the bonus identifier *IDbonus* is stored in the data terminal equipment 2_1 in the following three manners. In the first manner, the shopkeeper specifies a bonus identifier *IDbonus* when passing the draft of the shop details *INshop1* to the information provider. In response to the shopkeeper's operation, the data terminal equipment 2_1 stores thus specified bonus identifier *IDbonus* into the bonus identifier storage 26_1.

In the second manner, the information provider allocates a bonus identifier *IDbonus* when creating the bonus-attached file *Fbonus1*, and notifies the bonus identifier *IDbonus* to the shopkeeper typically by an e-mail. In response to the

shopkeeper's operation, the data terminal equipment 2_1 stores thus notified bonus identifier *IDbonus* in the bonus identifier storage 26_1.

In the third manner, the information provider allocates the bonus identifier *IDbonus* when creating the bonus-attached file *Fbonus1*. Because the bonus-attached file *Fbonus1* indicates the bonus identifier *IDbonus* as already described, if the bonus-attached file *Fbonus1* has been uploaded, the shopkeeper operates the data terminal equipment 2_1 to browse the bonus-attached file *Fbonus1* for the shop details *INshop1*, and derives the bonus identifier *IDbonus* therefrom. Responding to the shopkeeper's operation, the data terminal equipment 2_1 then stores thus derived bonus identifier *IDbonus* in the bonus identifier storage 26_1.

[0061] Described next is a data transmission system Sdt_1' as a modified example of the first embodiment. The data transmission system Sdt_1' is different from the data transmission system Sdt_1 in the respect that the WWW server 1_1 does not include the form data storage 14_1, and performed therein is not data communications of FIG. 6 but that of FIG. 10. These are the only differences therebetween, and thus FIGS. 1 to 5, and FIGS. 7 to 9 are referred to for description in the below.

[0062] Prior to data communications of FIG. 10, the shopkeeper has the information provider allocated a storage location of the bonus-attached file storage 15_1 in the WWW server 1_1. At this time,

the shopkeeper is notified of homepage directory of the second URL, which is described in the above. Here, the homepage directory is the one determined by the information provider, and specifies the storage location allocated to the shopkeeper.

[0063] In FIG. 10, the shopkeeper creates the bonus-attached file *Fbonus1* for his or her shop through operation of the data terminal equipment 2_1, and uploads it to the WWW server 1_1. At this time, the CPU 21_1 executes a process written in the program *Psdte* responding to the shopkeeper's operation. In detail, the CPU 21_1 creates the bonus-attached file *Fbonus1* for the shop details *INshop1* (see FIG. 3B) in response to the shopkeeper's operation (sequence SQ25). In more detail, the CPU 21_1 arranges on the RAM 23_1 the items *ITname*, *ITinfo*, *ITcob*, and *ITiob* on the background (see the first embodiment for details), creating the bonus-attached file *Fbonus1* for the shop details *INshop1*.

[0064] The CPU 21_1 then stores thus inputted bonus identifier *IDbonus* (item *ITiob* used in sequence SQ25) on the RAM 23_1 into the bonus identifier storage 26_1 as the internal bonus identifier *IDbonus'* (sequence SQ26). Here, the timing for sequence SQ26 is not restrictive as long as it is carried out after sequence SQ25, and before the data terminal equipment 3_1 requests for the bonus-attached file *Fbonus1* (see sequence SQ14 of FIG. 7).

[0065] Next, the CPU 21_1 accesses the WWW server 1_1 responding to the shopkeeper's operation to upload thereto the bonus-attached file *Fbonus1* created in sequence SQ25 (sequence SQ28).

More specifically, the shopkeeper adds his or her preferred file name to the homepage directory notified by the information provider through operation of the input unit 24_1, and specifies the second URL for the bonus-attached file *Fbonus1* to be uploaded. The CPU 21_1 transfers the bonus-attached file *Fbonus1* on the RAM 23_1 and the specified second URL to the first communications controller 27_1, from which the received bonus-attached file *Fbonus1* and the second URL are sent out onto the Internet 4_1.

[0066] The bonus-attached file *Fbonus1* and the second URL are forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_1, and then transferred to the RAM 13_1. After the bonus-attached file *Fbonus1* is stored in the RAM 13_1, the CPU 11_1 executes a process written in the program *Psrvr*. The CPU 11_1 then stores the bonus-attached file *Fbonus1* on the RAM 13_1 into the storage location of the bonus-attached file storage 15_1 specified by the second URL on the RAM 13_1 (Sequence SQ29). As a result, the bonus-attached file *Fbonus1* becomes available for the data terminal equipment 3_1 to request.

[0067] After creating the same storage completion acknowledgement *ASsc1* as in the first embodiment, the CPU 11_1 transfers it to the communications controller 16_1, from which thus received storage completion acknowledgement *ASsc1* is sent out onto the Internet 4_1 (sequence SQ30).

The storage completion acknowledge *ASsc1* is forwarded over the Internet 4_1 to the first communications controller 27_1

in the data terminal equipment 2_1, and then transferred to the RAM 23_1. The CPU 21_1 then transfers the storage completion acknowledgement *ASsc1* thus stored in the RAM 23_1 to the output unit 25_1. The output unit 25_1 then goes through a display process in accordance with the received storage completion acknowledgement *ASsc1*, and displays on its screen a message included therein (sequence SQ31). With the message, the shopkeeper can acknowledge that the bonus-attached file *Fbonus1* is now stored in the WWW server 1_1. Then, the CPU 21_1 cuts off access to the Internet 4_1 (sequence SQ32). Thereafter, data communications of FIGS. 7 and 8 is carried out.

[0068] As such, in this modified example, the shopkeeper can create freely the bonus-attached file *Fbonus1* to suit his or her preferences only by being allocated with the homepage directory (i.e., storage location of the bonus-attached file storage 15_1) by the information provider.

[0069] Described next is a data transmission system Sdt_2 according to the second embodiment of the present invention. FIG. 11 is a block diagram showing the structure of the data transmission system Sdt_2. The data transmission system Sdt_2 roughly includes the WWW server 1_1 which is the same as in the first embodiment, data terminal equipment 2_2 and 3_2, and a center station 6_2. The WWW server 1_1 and the data terminal equipment 2_2 and 3_2 are so structured as to be accessible to the Internet 4_1, which is the same as in the first embodiment. With such a

structure, the WWW server 1_1 at least can perform data communications with the data terminal equipment 2_2 and 3_2 over the Internet 4_1. The data terminal equipment 2_2 and 3_2 can perform data communications over the wireless transmission path 5_1, which is the same as in the first embodiment. Also, the data terminal equipment 2_2 can perform data communications with the center station 6_2 over a wired or wireless transmission path 7_2. Here, the transmission path 7_2 is either a public line or a leased line.

[0070] The data terminal equipment 2_2 is an information device which is, as is the data terminal equipment 2_1, placed on the shop side, and operated by the shopkeeper. FIG. 12 shows the structure thereof. Compared with the data terminal equipment 2_1 of FIG. 4, the data terminal equipment 2_2 of FIG. 12 further includes a third communications controller 29_2. This is the only structural difference, and thus any constituent of FIG. 12 identical to that of FIG. 4 is provided with the same reference numeral, and not described again. In accordance with the transmission protocol for the transmission path 7_2, the third communications controller 29_3 sends out various data transferred from the RAM 23_1 to the transmission path 7_2, or receives various data transmitted over the transmission path 7_2 and transfers the data to the RAM 23_1.

[0071] Similar to the data terminal equipment 3_1, the data terminal equipment 3_2 is an information device structured as to be carried along by the user, the structure of which is shown in FIG. 13. Compared with the data terminal equipment 3_1 of FIG.

5, the data terminal equipment 3_2 of FIG. 13 further includes a personal data storage 39_2. This is the only structural difference therebetween, and thus any constituent of FIG. 13 identical to that of FIG. 5 is provided with the same reference numeral, and not described again. The personal data storage 39_2 stores the user's personal data *Duser*. Herein, the personal data *Duser* is presumably composed of the user's credit card number, and the valid date of the credit card.

[0072] The center station 6_2 is managed by a credit card provider, and performs a billing process with respect to the user. The center station 6_2 includes, as shown in FIG. 14A, a CPU 61_2. ROM 62_2, RAM 63_2, a personal database storage 64_2, and a communications controller 65_2. The CPU 61_1 executes various processes by following a computer program *Pss* which is previously recorded on the ROM 62_2. When executing the computer program *Pss*, the CPU 61_1 uses the RAM 63_2 as a working area. The personal database storage 64_2 is typically composed of a hard disk drive, and stores therein a personal database *DBuser* (see FIG. 14B). In accordance with the transmission protocol for the transmission path 7_2, the communications controller 65_2 sends out various data transferred from the RAM 63_2 to the transmission path 7_2, or receives various data transmitted over the transmission path 7_2 and transfers the data to the RAM 63_2.

[0073] The personal database *DBuser* stores personal data *Duser* and status data *Dstat* for every user under contract to the credit

card provider. As a specific example, the personal database *DBuser* is composed of, as shown in FIG. 14B, a plurality of unit records *Runit21*, each of which represents a user's status report of his or her credit card. The record unit *Runit21* includes both the personal data *Duser* and the status data *Dstat*. Specifically, the personal data *Duser* is, as already described, composed of the user's credit card number and its valid date. The status data *Dstat* at least includes the date when the user used the credit card, the shop name where the user used the credit card, and the user's amount of charge (charged amount *Cdisc* or *Cnoml*, which will be later described).

[0074] Described next is data communications performed in the data transmission system Sdt_2. Data communications between the WWW server 1_1 and the data terminal equipment 2_2 is the same as that of FIG. 6, and not described here. Also, data communications between the WWW server 1_1 and the data terminal equipment 3_2 is the same as that of FIG. 7, and not described here either.

[0075] After sequence SQ18 of FIG. 7, the user goes to the target shop with the data terminal equipment 3_2 to get services from the shop, make purchases thereat, and receive the corresponding bonus. In the target shop, data communications as shown in FIGS. 15 and 16 is performed among the data terminal equipment 2_2 and 3_2, and the center station 6_2.

[0076] In FIG. 15, the CPU 21_1 in the data terminal equipment 2_2 executes a process written in the program *Psdte* responding to

the shopkeeper's operation. More specifically, the CPU 21_1 establishes a connection with the data terminal equipment 3_2 (sequence SQ33). After such a connection establishment, the CPU 31_1 on the data terminal equipment 3_2 side executes a process written in the program *Pudte*.

[0077] The CPU 21_1 generates a request *RSiau* on the RAM 33_1, and transfers it to the second communications controller 28_1. Here, the request *RSiau* is a signal for requesting the data terminal equipment 3_2 to transmit the external bonus identifier *IDbonus"* and the personal data *Duser* to the data terminal equipment 2_2. The second communications controller 28_1 then sends out the received request *RSiau* onto the wireless transmission path 5_1. In such a manner, a request is made for the bonus identifier and the personal data (sequence SQ34).

[0078] The request *RSiau* is forwarded over the wireless transmission path 5_1 to the second communications controller 38_1 in the data terminal equipment 3_2, and then transferred to the RAM 33_1. After the request *RSiau* is stored in the RAM 33_1, the CPU 31_1 reads the external bonus identifier *IDbonus"* from the bonus identifier storage 36_1 onto the RAM 33_1. The CPU 31_1 also reads the personal data *Duser* from the personal data storage 39_2 onto the RAM 33_1. Then, the CPU 31_1 transfers, to the second communications controller 38_1, the external bonus identifier *IDbonus"* and the personal data *Duser* on the RAM 33_1. The second communications controller 38_1 sends out thus received external

bonus identifier *IDbonus"* and the personal data *Duser* onto the wireless transmission path 5_1 (sequence SQ35).

[0079] The external bonus identifier *IDbonus"* and the personal data *Duser* are forwarded over the wireless transmission path 5_1 to the second communications controller 28_1 in the data terminal equipment 2_2, and then transferred to the RAM 23_1. The CPU 21_1 also reads out the internal bonus identifier *IDbonus'* from the bonus identifier storage 26_1 onto the RAM 23_1. Here, the timing for reading the internal bonus identifier *IDbonus'* is not restrictive as long as it is between after sequence SQ33 and before sequence SQ36. In such a manner, the RAM 23_1 stores the personal data *Duser*, and the internal and external bonus identifiers *IDbonus'* and *IDbonus"*. Next, the CPU 21_1 determines whether the external bonus identifier *IDbonus"* is the same as the internal bonus identifier *IDbonus'* (sequence SQ36).

[0080] If the external bonus identifier *IDbonus"* is the same as the internal bonus identifier *IDbonus'*, the CPU 21_1 determines that the user is the one visiting the shop due to the shop details *INshop1*, and the procedure goes to sequence SQ37. Then, the CPU 21_1 executes a process of awarding the bonus to the user (sequence SQ37). Herein, similar to the first embodiment, the user is assumed as visiting the shop due to the shop details *INshop1* of FIG. 3B, and the external bonus identifier *IDbonus"* stored in the data terminal equipment 3_1 is yyyy. Also, the target shop is assumed as being the one found in the shop details *INshop1* of FIG.

3B similar to the first embodiment, and thus the internal bonus identifier *IDbonus'* stored in the data terminal equipment 2_2 is also yyyy. Accordingly, the user gets a bonus of 20% OFF on meal charges. In sequence SQ37, specifically, the CPU 21_1 calculates the resultant 20% deducted amount of charge, i.e., charge amount *Cdisc*. The CPU 21_1 then creates, on the RAM 23_1, the status data *Dstat* including thus calculated charge amount *Cdisc*, the date, i.e., when the credit card is used, and the shop name. Here, the shop name is assumed to be previously registered in the data terminal equipment 2_2. Preferably, the CPU 21_1 has the output unit 25_1 displayed the charge amount *Cdisc* for the user.

After sequence SQ37 is through, the CPU 21_1 cuts off the connection with the data terminal equipment 3_2 (sequence SQ38).

[0081] In sequence SQ37, if the CPU 21_1 determines that the external bonus identifier *IDbonus"* is not the same as the internal bonus identifier *IDbonus'*, the procedure goes to sequence SQ39 of FIG. 16. In sequence SQ39, the CPU 21_1 executes a process of not giving the user the bonus, which is 20% OFF on meal charges in the above example. In such a case, the CPU 21_1 makes no discount on the user's meal charges in sequence SQ39, and the resultant amount charge is derived as the charge amount *Cnoml*. The CPU 21_1 then creates, on the RAM 23_1, the status data *Dstat* including thus calculated charge amount *Cnoml*, the date, i.e., when the credit card is used, and the shop name. Preferably, the CPU 21_1 has the

output unit 25_1 displayed the charge amount *Cnoml*.

After sequence SQ37 is through, the CPU 21_1 cuts off the connection with the data terminal equipment 3_2 (sequence SQ38).

[0082] After sequence SQ38 is through, the CPU 21_1 establishes a connection with the center station 6_2 (sequence SQ39). After such a connection establishment, the CPU 61_2 on the center station 6_2 side executes a process written in the computer program *Pss*.

After sequence SQ39, the CPU 21_1 transfers, to the third communications controller 29_2, the set of the personal data *Duser* and the status data *Dstat* on the RAM 23_1. The third communications controller 29_2 sends out thus received set onto the transmission path 7_2 (sequence SQ40).

[0083] The set of the personal data *Duser* and the status data *Dstat* is forwarded over the transmission path 7_2 to the communications controller 65_2 in the center station 6_2, and then transferred to the RAM 63_2. Then, the CPU 61_1 performs a billing process (sequence SQ41). More specifically, the CPU 61_2 searches the personal database *DBuser* in the personal database storage 64_2 for any unit record *Runit* (hereinafter, referred to as a target unit record *Runit'*) including the same personal data *Duser* on the RAM 63_2. Once found the target unit record *Runit'*, the CPU 61_1 fills the unit record Runit' with the charge amount *Cdics* (or *Cnoml*), the date, and the shop name included in the status data

Dstat on the RAM 63_2. This is the end of the billing process.

[0084] After the billing process (sequence SQ41) is correctly through, the CPU 61_2 generates, on the RAM 63_2, a billing completion acknowledgement *ASchar* to indicate as such, and transfers it to the communications controller 65_2. The communications controller 65_2 sends out thus received billing completion acknowledgement *ASchar* onto the transmission path 7_2 (sequence SQ42).

[0085] The billing completion acknowledgement *ASchar* is forwarded over the transmission path 7_2 to the third communications controller 29_2 in the data terminal equipment 2_2, and then transferred to the RAM 23_1. Then, the CPU 21_1 preferably goes through a process of issuing the bill (sequence SQ43), and the bill is handed to the user at the shop. After sequence SQ43, the CPU 21_1 cuts off the connection with the center station 6_2 (sequence SQ44).

[0086] On the other hand, if the billing process (sequence SQ41) is failed to be correctly completed, the CPU 61_2 generates, on the RAM 63_2, an incompletion acknowledgement indicating as such, and forwards it to the data terminal equipment 2_2 via the communications controller 65_2 and the transmission path 7_2. In response, the data terminal equipment 2_2 cancels all of the sequences so far carried out. As to such a case where the billing process (sequence SQ41) is not correctly through, no further description is given here as is not the scope of the present

embodiment.

[0087] The credit card provider charges the user based on the unit record *Runit* recorded on the personal database *DBuser*.

[0088] As described above, with the data transmission system Sdt_2, the user can receive the bonus from the target shop as with the data transmission system Sdt_1. Moreover, with the personal data *Duser* previously stored in the data terminal equipment 3_2, the user can receive services from the shop or make purchases thereat with no cash payment. In this sense, the data transmission system Sdt_2 has better usability.

[0089] Also in the second embodiment, the bonus may be points given to the user according to his or her meal charges. In this case, the data terminal equipment 2_2 or 3_2 calculates the user's points in total, and correspondingly provides the user with gifts or services. In the case where such a point service is the bonus, with no discount on the user's meal charges in sequence SQ37, the CPU 21_1 calculates the charge amount *Cnoml*, and the corresponding points are provided to the user. On the other hand, if the CPU 21_1 calculates the charge amount *Cnoml* in sequence SQ39, no point is provided to the user.

[0090] In the second embodiment, a single data terminal equipment 2_2 is presumed for convenience to perform all of data communications of FIGS. 6, 15, and 16. This is not restrictive, and two of the data terminal equipment 2_2 physically differed from each other may be provided, and one may be in charge of data

communications of FIG. 6, and the other data communications of FIGS. 15 and 16.

[0091] In the above, the data terminal equipment 3_2 stores the user's credit card number and its valid date as the personal data *Duser*, and is provided with a function as credit cards. This is not restrictive, and the data terminal equipment 3_2 may store the user's bank account number and its PIN (Personal Identification Number), and be provided with a function as debit cards.

[0092] Described next is a data transmission system Sdt_3 according to the third embodiment of the present invention. FIG. 17 is a block diagram showing the structure of the data transmission system Sdt_3, which roughly includes a WWW server 1_3, the same data terminal equipment 2_1 as in the first embodiment, and data terminal equipment 3_3. Herein, the WWW server 1_3, and the data terminal equipment 2_1 and 3_3 are so structured as to be accessible to the Internet 4_1, which is the same as in the first embodiment. With such a structure, at least the WWW server 1_3 can perform data communications with the data terminal equipment 2_1 and 3_3 over the Internet 4_1. Moreover, the data terminal equipment 2_1 and 3_3 can perform data communications therebetween over the wireless transmission path 5_1, which is the same as in the first embodiment.

[0093] FIG. 18 shows the structure of the WWW server 1_3, which is managed by an information provider. Here, the information provider is the one who stores a bonus-attached file *Fbonus3* (see

FIG. 20B) in the WWW server 1_3 responding to a request from the shop, and by using the bonus-attached file *Fnonus3*, provides the shop details to the user. Here, compared with the WWW server 1_1 of FIG. 2, the WWW server 1_3 of FIG. 18 includes a form data storage 14_3, a bonus-attached file storage 15_3, and a conversion table storage 17_3 as alternatives to the form data storage 14_1, and the bonus-attached file storage 15_1. These are the only structural differences therebetween, and thus any constituent of FIG. 18 identical to that of FIG. 2 is provided with the same reference numeral, and not described again.

[0094] The form data storage 14_3 is typically composed of a hard disk drive, and stores form data *Dform3* in a storage location specified by a predetermined first URL (Uniform Resource Locator). With the form data *Dform3*, such an input form *Fin3* as shown in FIG. 19A can be displayed at least by the data terminal equipment 2_3. The input form *Fin3* is so structured as to allow the shopkeeper using the data terminal equipment 2_3 to fill out items *IT*, which are needed to create the bonus-attached file *Fbonus3*. As to the items *IT*, to be filled out in the present embodiment are three of those *ITname*, *ITaddr*, and *ITnote* selected by the information provider. Specifically, the item *ITname* is a shop name, and the item *ITaddr* is a shop address. The item *ITnote* is details of a bonus, which denotes herein a merit awarded specially to the user who becomes the customer of the shop. With these three items *IT* selected, the input form *Fin3* is structured by three input columns

Cname, *Caddr*, and *Cnote*. The shopkeeper using the data terminal equipment 2_3 fills out those input columns *Cname*, *Caddr*, and *Cnote* with, respectively, a shop name (item *ITname*), a shop address (item *ITaddr*), and bonus details (item *ITnote*).

[0095] The input form *Fin3* has a transmission button *Btx3*, a function assigned to which is of transmitting the items *ITname*, *ITaddr*, and *ITnote* filled out in the input columns *Cname*, *Caddr*, and *Cnote* to the WWW server 1_3. The transmission button *Btx3* is clicked by the shopkeeper using the data terminal equipment 2_3. When the transmission button *Btx3* is clicked, the data terminal equipment 2_3 responsively transmits, to the WWW server 1_3, item data *Ditem3* (see sequence SQ44 of FIG. 23) including those inputted items *ITname*, *ITaddr*, and *ITnote*.

[0096] The bonus-attached file storage 15_3 stores the bonus-attached file *Fbonus3* (see FIG. 20B) in a storage location specified by a predetermined second URL. The bonus-attached file storage 15_3 also stores a base file *Fbase3* in a predetermined storage location. The base file *Fbase3* represents the background of the bonus-attached file *Fbonus3*, and is used when the WWW server 1_3 creates the bonus-attached file *Fbonus3* (see sequence SQ46 of FIG. 23). Here, the base file *Fbase3* is used only by the WWW server 1_3, and thus there is no need to assign a URL to the base file *Fbase3*.

[0097] The bonus-attached file *Fbonus3* is described in more detail. The bonus-attached file *Fbonus3* is created by the WWW

server 1_3 using the item data *Ditem3* and base data *Fbase3* (see sequence SQ46 of FIG. 23). With the bonus-attached file *Fbonus3*, such shop details *INshop3* as shown in FIG. 20A can be displayed at least on the data terminal equipment 3_3 side. The bonus-attached file *Fbonus3* is written in POIX (Point Of Interest eXchange language). Details of the POIX are found, as of January 26, 2001, in http://mostec.aplix.co.jp/poix.html or http://www.w3.org/TR/poix, and thus only any elements relating to the bonus-attached file *Fbonus3* are only described here.

[0098] The bonus-attached file *Fbonus3* is indicated by an element *poi*, and roughly composed of a shop name (referred to as a target in POIX), a representative shop position, and shop details. The shop name is indicated by an element *name*, and more specifically, written by a sub-element *nb*. The sub-element *nb* indicates the shop name in a specific form of <nb> shop name </nb>. The representative shop position is indicated by an element *point*, and more specifically, written by a sub-element *pos*. The sub-element *pos* indicates the representative shop position, which is defined by, at least, latitude and longitude. An element *lat* indicates the latitude of the representative shop position, in a specific form of <lat>latitude</lat>. An element *lon* indicates the longitude of the representative shop position, in a specific form of <lon>longitude</lon>. The shop details are indicated by an element *note*, and written by letter characters. The specific form of the element *note* is <note>bonus details</note>. In the

present embodiment, the element *note* indicates in detail the bonus offered by the shop. Here, the element *note* may indicate the menu of the shop in addition to the bonus.

[0099] Assuming here is that the bonus-attached file *Fbonus3* includes such an element *poi* as shown in FIG. 20B, i.e., <nb> pub X</nb>, <lat>35.50</lat>, <lon>135.75</lon>, and <note>20% OFF on meal charges</note>. With such a bonus-attached file *Fbonus3*, displayed on the data terminal equipment 3_3 is the shop details *INshop3* of the pub X in FIG. 20A. Here, in the shop details *INshop3*, the representative shop position is at latitude 35.50° , and longitude 135.75° . However, for the user's easy understanding, the display shows the specific location of the pub X as its address (see sequences SQ55 and SQ56 of FIG. 24). As the bonus for the user visiting the pub X due to the shop details *INshop3*, displayed is "20% OFF on meal charges".

[0100] The conversion table storage 17_3 has such a conversion table *Tconv31* as shown in FIG. 21A. Specifically, the conversion table *Tconv31* is composed of a plurality of unit records *Runit31*, which are created on the basis of shop address, i.e., for every item *ITaddr*. The unit records *Runit31* each include the shop address (item *ITaddr*), and the set of latitude and the longitude indicating the representative position of the shop. Such a conversion table *Tconv31* is used when the WWW server 1_3 creates the bonus-attached file *Fbonus3* (see sequence SQ46 of FIG. 23). Here, the conversion table *Tconv31* is used only by the WWW server

1_3, and thus there is no need to assign a URL to the conversion table *Tconv31*.

[0101] Refer back to FIG. 17. The structure of the data terminal equipment 2_1 remains the same as described in the first embodiment, and thus is not described again.

The data terminal equipment 3_3 is an information device which is typically structured as to be carried along by the user, i.e., the potential customer of the shop, and is provided with a navigation function. Such data terminal equipment 3_3 is typified by portable navigation devices. FIG. 22 shows the structure of the data terminal equipment 3_3. Compared with the data terminal equipment 3_1 of FIG. 5, the data terminal equipment 3_3 of FIG. 22 further includes, at least, a cartographic database storage 310_3, a receiver 311_3, and a conversion table storage 312_3. These are the only structural differences therebetween, and thus any constituent of FIG. 22 identical to that of FIG. 5 is provided with the same reference numeral, and not described again.

[0102] The cartographic database storage 310_3 stores a cartographic database *DBcart*, which is composed of several cartographic files. To each of the cartographic files, assigned is a predetermined area which is defined by latitude and longitude. The cartographic files each include image data for representing the area assigned thereto, and road network data for representing the road connections in the assigned area. The road network data is, schematically, structured by nodes and links. The nodes

specify characteristic points (any of intersections, or curving points on roads) in the road network, while the links each denote a road between any two characteristics points.

[0103] The receiver 311_3 is typically composed of a GPS (Global Positioning System) receiver, and calculates the position of the data terminal equipment 3_3 based on position information transmitted from artificial satellites. The calculation result by the receiver 311_3 is defined by latitude and longitude, and transmitted to the CPU 311_1. Here, the GPS receiver is not restrictive to the receiver 311_3 as long as heteronomous navigation is realized thereby. Here, heteronomous navigation is an antonym of autonomous navigation, and means navigation by which the position of the data terminal equipment 3_3 being a mobile unit can be derived based on the position information provided by any other positioning systems.

[0104] The conversion table storage 312_3 stores such a conversion table *Tconv32* as shown in FIG. 21B. Specifically, the conversion table *Tconv32* is composed of several of a unit record *Runit32*, which is created for every representative position *Ptypc* of FIG. 21A. The unit record *Runit32* includes the representative position *Ptypc*, and the shop address (item *ITaddr*). Such a conversion table *Tconv32* is used by the data terminal equipment 3_3 for creating display data *Ddisp* (see sequence SQ55 of FIG. 24).

[0105] Thus described above are the structural differences between the data transmission system Sdt_1 and the data

transmission system Sdt_3. By referring to FIGS. 23 and 24, described next is the differences between data communications in the data transmission system Sdt_1 and that in the data transmission system Sdt_3.

[0106] Referring to FIG. 23, described first is data communications between the WWW server 1_1 and the data terminal equipment 2_1. In FIG. 23, the shopkeeper operates the data terminal equipment 2_1 so as to request the information provider to create and store the bonus-attached file *Fbonus3* for his or her shop. At the time of such a request, the CPU 21_1 executes a process written in the program *Psdte* responding to the shopkeeper's operation. More specifically, the CPU 21_1 first accesses the Internet 4_1 (sequence SQ40).

[0107] Then, the shopkeeper enters a first URL through operation of the input unit 24_1. The CPU 21_1 generates on the RAM 23_1a request *RSfd3* including the first URL, and transfers it to the first communications controller 27_1. The request *RSfd3* is a signal for requesting the WWW server 1_3 to transmit the form data *Dform3* to the data terminal equipment 2_1. The first communications controller 27_1 sends out the received request *RSfd3* onto the Internet 4_1. As such, a request is made for the form data *Dform3* (sequence SQ41).

[0108] The request *RSfd3* is forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_3, and then transferred to the RAM 13_1. After the request *RSfd3* is stored

in the RAM 13_1, the CPU 11_1 executes a process written in the program *Psrvr*. Specifically, the CPU 11_1 extracts the first URL from the request *RSfd3* on the RAM 13_1, and then reads the form data *DForm3* from the storage location in the form data storage 14_3 which is specified by the first URL onto the RAM 13_1. Then, the CPU 11_1 transfers the form data *Dform3* on the RAM 13_1 to the communications controller 16_1, from which the form data *Dform3* is sent out onto the Internet 4_1 (sequence SQ42).

[0109] The form data *Dform3* is forwarded over the Internet 4_1 to the first communications controller 27_1 in the data terminal equipment 2_1, and then transferred to the RAM 23_1. The CPU 21_1 then transfers the form data *Dform3* on the RAM 23_1 to the output unit 25_1. The output unit 25_1 then performs a display process in accordance with the received form data *Dform3*, and displays on its screen such an input form *Fin3* as shown in FIG. 19A (sequence SQ43).

[0110] With the input form *Fin3* displayed, the shopkeeper fills, through operation of the input unit 24_1, the input columns *Cnames*, *Caddr*, and *Cnote* with the shop name (item *ITname*), the shop address (item *ITaddr*), and the bonus details (item *ITnote*). As exemplarily shown in FIG. 19A, the shopkeeper herein presumably fills out the input column *Cname* with the shop name "pub X", the input column *Cadds* with his or her shop address, and the input column *Cnote* with "20% OFF on meal charges" as bonus details. After completely filling out the input form *Fin3* as such, the

shopkeeper clicks the transmission button *Btx3* through the input unit 24_1. Then, the CPU 21_1 creates on the RAM 23_1 the item data *Ditem3* including those inputted items *ITname*, *ITaddr*, and *ITnote* (sequence SQ44).

[0111] The CPU 21_1 then transfers the item data *Ditem3* on the RAM 23_1 to the first communications controller 27_1, from which the item data *Ditm3* is sent out onto the Internet 4_1 (sequence SQ45). The item data *Ditem3* is forwarded over the Internet 4_1 to the communications controller 16_1 in the WWW server 1_3, and then transferred to the RAM 13_1.

[0112] After the item data *Ditem3* is stored in the RAM 13_1, the CPU 11_1 creates the bonus-attached file *Fbonus3* (sequence SQ46). More in detail, the CPU 11_1 reads a base file *Fbase3* from the bonus-attached file storage 15_3 onto the RAM 13_1. Then, the CPU 11_1 retrieves the item *ITname* (shop name) from the item data *Ditem3* on the RAM 13_1 so as to create <nb>shop name</nb> using the element *nb*. As to the item *ITnote* (bonus details), the CPU 11_1 creates <note>bonus details</note> in the similar manner. The CPU 11_1 then retrieves the item *ITaddr* from the item data *Ditem3* on the RAM 13_1, and accesses to the conversion table *Tconv31* stored in the conversion table storage 17_3. Then, the CPU 11_1 searches for the unit record *Runit31* including the retrieved item *ITaddr* (shop address), and from thus found unit record *Runit31*, reads the representative position *Ptypc* onto the RAM 13_1. As to the latitude found in the representative position *Ptypc*, the CPU 11_1

creates <lat>latitude</lat> using the element *lat*. Similarly to the longitude found therein, created is <lon>longitude</lon> using the element *lon*.

[0113] The CPU 11_1 then allocates thus created <nb>shop name</nb>, <note>bonus details</note>, <lat>latitude</lat>, and <lon>longitude</lon> each onto the predetermined position on the background represented by the base file *Fbase3*. In this manner, a bonus-attached file *Fbonus3* is created on the RAM 13_1. After assigning the second URL to the bonus-attached file *Fbonus3* on the RAM 13_1, the CPU 11_1 stores it in the storage location of the bonus-attached file storage 15_3 which is specified by the second URL (sequence SQ47). As a result, the bonus-attached file *Fbonus3* becomes available in sequence SQ53 of FIG. 24 for the user's data terminal equipment 3_3 to request.

[0114] After sequence SQ47 is through, the CPU 11_1 generates a storage completion acknowledgement *ASsc3* including the second URL assigned to the current bonus-attached file *Fbonus3*, and transfers it to the communications controller 16_1. Here, together with the second URL, the storage completion acknowledgement *ASsc3* is a signal including also a message telling that the bonus-attached file *Fbonus3* is now stored in the bonus-attached file storage 15_3. The communications controller 16_1 sends out thus received storage completion acknowledgement *ASsc3* onto the Internet 4_1 (sequence SQ48).

[0115] The storage completion acknowledgement *ASsc3* is

forwarded over the Internet 4_1 to the first communications controller 27_1 in the data terminal equipment 2_1, and then transferred to the RAM 23_1. The CPU 21_1 transfers the storage completion acknowledgement *ASsc3* thus stored in the RAM 23_1 to the output unit 25_1. The output unit 25_1 executes a display process in accordance with the received storage completion acknowledgement *ASsc3*, and then displays on its screen the message included in the storage completion acknowledgement *ASsc3* (sequence SQ49). This makes the shopkeeper acknowledge that his or her request is now processed by the information provider, i.e., the WWW server 1_3.

[0116] The CPU 21_1 then extracts the second URL from the storage completion acknowledgement *ASsc3* on the RAM 23_1, and stores it as the bonus identifier *IDbonus* in the bonus identifier storage 26_1 (sequence SQ50). The bonus identifier *IDbonus* is an identifier for uniquely identifying the bonus included in the bonus-attached file *Fbonus3*. Here, the bonus identifier *IDbonus* stored in sequence SQ50 is now referred to as an internal bonus identifier *IDbonus'*. The internal bonus identifier *IDbonus'* is used in sequence SQ22 of FIG. 8 which will be described below, and thus is not described in detail now. Here, the timing for sequence SQ50 is not restrictive as long as it is carried out after the storage completion acknowledgement *ASsc3* is stored in the RAM 23_1, and before sequence SQ22.

After sequence SQ50, the CPU 21_1 cuts off the access

to the Internet 4_1 (sequence SQ51).

[0117] In the above, sequences SQ40 to SQ51 are presumed to be gone through successively for convenience. This is not restrictive, and after sequence SQ45 is through, the CPU 21_1 may cut off access to the Internet 4_1 for a time. This is because, as described in the first embodiment, it may take time to create the bonus-attached file *Fbonus3*, and if so, the shopkeeper may have to wait long, and may be charged for extra communications expenses. If this is the case, the WWW server 1_3 preferably transmits an e-mail including the same message and the second URL as in the storage completion acknowledgement *ASsc3* to the data terminal equipment 2_1. Thereby, the shopkeeper can read the message and know the second URL as the bonus identifier *IDbonus* whenever convenient, shortening waiting time and reducing communications expenses.

[0118] Referring to FIG. 24, described next is data communications between the WWW server 1_1 and the data terminal equipment 3_3. Through operation of data terminal equipment 3_1 carrying along, the user browses the bonus-attached file *Fbonus3* on the WWW server 1_1. During such browsing, the CPU 31_1 executes a process written in the program *Pudte* responding to the user's operation. More specifically, the CPU 31_1 accesses the Internet 4_1 (sequence SQ52).

[0119] Then, the user operates the input unit 34_1 to enter the second URL. The CPU 31_1 generates on the RAM 33_1 a request *RSsd3*

including the second URL, and transfers it to the first communications controller 37_1. Here, the request *RSsd3* is a signal for requesting the WWW server 1_1 to forward the bonus-attached file *Fbonus3* to the data terminal equipment 3_3. The first communications controller 37_1 sends out the received request *RSsd3* onto the Internet 4_1, As such, a request is made for the bonus-attached file *Fbonus3* (sequence SQ53).

[0120] The request *RSsd3* is then stores in the RAM 13_1 via the communications controller 16_1 in the WWW server 1_1. In response, the CPU 11_1 reads the bonus-attached file *Fbonus3* from the storage location of the bonus-attached file storage 15_3, and transfers it to the communications controller 16_1. Here, the storage location in the bonus-attached file storage 15_3 is specified by the second URL in the request *RSsd3*. The communications controller 16_1 sends out the received bonus-attached file *Fbonus3* onto the Internet 4_1 (sequence SQ54).

[0121] The bonus-attached file *Fbonus3* is stored in the RAM 33_1 via the Internet 4_1, and the first communications controller 37_1 in the data terminal equipment 3_3. Then, based on the bonus-attached file *Fbonus3* on the RAM 33_1, the CPU 31_1 creates display data *Ddisp* (sequence SQ55). More specifically, the CPU 31_1 extracts the representative position *Ptypc* from the bonus-attached file *Fbonus3* on the RAM 33_1, and accesses to the conversion table *Tconv32* (see FIG. 21B) stored in the conversion table storage 312_3. Then. the CPU 31_1 searches for the unit record

Runit32 including thus extracted representative position *Ptypc* (latitude and longitude), and from the found unit record *Runit32*, reads the shop address (item *ITaddr*) onto the RAM 13_1. The CPU 11_1 then replaces <lat>latitude</lat> and <lon>longitude</lon> in the bonus-attached file *Fbonus3* with the shop address (item *ITaddr*), whereby a single piece of display data *Ddisp* is created on the RAM 13_1.

[0122] The display data *Ddisp* on the RAM 33_1 is transferred to the output unit 35_1 by the CPU 31_1. The output unit 35_1 then executes a display process in accordance with the received display data *Ddisp* so as to display an image representing the shop details *INshop3* (sequence SQ56). This allows the user to browse the shop details *INshop3*. Assuming here that the user browses the shop details *INshop3* of FIG. 20A.

[0123] After sequence SQ55, if the user decides to go to the displayed shop and wants to get the bonus of the shop, he or she instructs as such through operation of the input unit 34_1. In response thereto, the CPU 31_1 stores in the bonus identifier storage 36_1 the second URL of the current bonus-attached file *Fbonus3* as the bonus identifier *IDbonus* (sequence SQ57). Here, the bonus identifier *IDbonus* stored in sequence SQ56 is now referred to as an external bonus identifier *IDbonus"*. The external bonus identifier *IDbonus"* is the one used in sequence SQ22 of FIG. 22 below, and is not described here in detail.

[0124] After sequence SQ57, the CPU 31_1 cuts off access to the

Internet 4_1 (sequence SQ58), and then determines that the user as heading for the target shop, and thus starts to search for a route from the user's current position to the shop (Sequence SQ59). Here, the target shop is the one in the currently received bonus-attached file *Fbonus3*. Referring to the flowchart of FIG. 25, the procedure of sequence SQ59 is described more specifically.

[0125] In FIG. 25, the CPU 31_1 sets a starting point and a destination of a route to be searched (step ST591). As a specific example of step ST591, the CPU 31_1 receives the calculation result from the receiver 311_3, and then sets the latitude and the longitude indicated thereby as the starting point. Then, the CPU 31_1 extracts the latitude and longitude indicated by the representative position *Ptypc* from the bonus-attached file *Fbonus3*. Alternatively, the user designates the starting point through operation of the input unit 34_1. The CPU 31_1 sets thus designated starting point as it is. Even if so, the destination is the one defined by latitude and longitude indicated by the representative position *Ptypc* extracted from the bonus-attached file *Fbonus3*.

[0126] After step ST591 is through, the CPU 31_1 reads, from the cartographic database *DBcart* in the cartographic database storage 310_3 to the RAM 33_1, the road network data of an area needed in the next step ST593 (step ST592). Read in step ST592 is the road network data of a rectangular region including both the starting point and the destination set in step ST581.

[0127] The CPU 31_1 then searches for an optimum route from the starting point to the destination using the road network data read in step ST592 (step ST593). To be more specific, the optimum route is derived by using a route selection algorithm typified by the Dijkstra's algorithm, and typically is a route which allows the user to reach his or her destination in the shortest time or distance. The CPU 31_1 creates route data representing, by nodes and links, the optimum route derived in step ST593 (step ST594). This is the end of the process of FIG. 25, and the procedure now goes to a user's guidance process of FIG. 24 (sequence SQ60). Referring to the flowchart of FIG. 26, the detailed procedure of sequence SQ60 is next described.

[0128] In FIG. 26, the CPU 31_1 receives the calculation result from the receiver 311_3, and estimates the latitude and longitude found therein as the user's current position (step ST601). Here, as is well known, the position information transmitted from artificial satellites previously includes an error, and thus it is preferable for the CPU 31_1 to correct those latitude and longitude based on correction information transmitted from a base station accommodated in D-GPS (Differential GPS). If this is the case, the data terminal equipment 3_1 requires a receiver specifically for the D-GPS. To be prepared for a case where the position information from artificial satellites cannot be received, the data terminal equipment 3_1 is preferably provided with a sensor for autonomous navigation. In the case where the

data terminal equipment 3_1 is specifically designed for vehicles, typified example as a sensor for autonomous navigation is a vehicle-speed sensor or a gyro compass. If the data terminal equipment 3_1 is designed to be carried along (not for vehicles), a pedometer or an azimuth sensor is a typical sensor for autonomous navigation.

[0129] After step ST601, the CPU 31_1 reads, from the cartographic database *DBcart* in the cartographic database storage 310_3 to the RAM 33_1, the cartographic file for the area around the user's current position (step ST602). For convenience, the cartographic file reading is presumably never failed to be done after step ST601. This is not restrictive, and procedure may skip step ST602 as required.

[0130] Next, the CPU 31_1 creates guidance data (step ST603). More in detail, the CPU 31_1 rips one specific cartographic file on the RAM 33_1 for the display process on the output unit 35_1 this time. As to thus ripped cartographic file, the CPU 31_1 then applies a rendering process using a frame memory which is reserved in RAM 33_1, and creates intermediate image data representing the map to be displayed. From the route data derived in sequence SQ59, the CPU 31_1 creates an object representing the route to the destination (the target shop) from the current position estimated in step ST601. The CPU 31_1 then blends to the intermediate image data the route object and an object representing a pointer pointing the user's current position together, thereby creating

the guidance data. The guidance data represents an image resultantly derived by merging the user's current position and the route to the destination on the map to be displayed, and is transferred from the frame memory (RAM 33_1) to the output unit 35_1. The output unit 35_1 then performs the display process in accordance with the received guidance data, and displays on its screen the map onto which the user's current position and the route to the destination are merged (step ST604).

[0131] Then, the CPU 31_1 determines whether the user's current position is the same as the destination (step ST605). If no, the CPU 31_1 determines that the user does not yet reach the target shop, i.e., destination, and the procedure returns to step ST601 to repeats steps ST601 to ST604. On the other hand, if the user's current position is the same as the destination, the CPU 31_1 determines that the user has reached the destination, and this is the end of the process of FIG. 26, and data communications of FIG. 24 is terminated.

[0132] After such a guidance process is through, the user gets services from the target shop, make purchases thereat, and receives the corresponding bonus. To receive the bonus, the data terminal equipment 2_1 and 3_3 performs therebetween such data communications as shown in FIG. 8, which is not described again.

[0133] As described above, with the data transmission system Sdt_3, the user can receive a bonus from the corresponding shop as with the data transmission system Sdt_1. Further, the data

terminal equipment 3_3 can make a guidance for the user to the target shop. In this sense, the data transmission system Sdt_3 has better usability.

[0134] If the data terminal equipment 3_1 is so designed as to be carried along (not for vehicles), in step ST593, not only searching for an optimum route from the starting point to the destination, if the user needs to use any public transportation such as trains, any helpful information may be displayed, i.e., timetable information about a station closest to the starting point or the destination, train type (e.g., express, local) to take, estimated time for reaching the closest station or the destination, the estimated time taken to the destination, the fare to the destination.

[0135] The data terminal equipment 3_1 may execute a process of making a reservation at the shop after searching for the optimum route from the starting point to the destination. Further, if noticing that the user may not be at the destination at the estimated time, or be at the shop in time before the reservation time, the data terminal equipment 3_1 may notify the user as such through display. In such a case, the data terminal equipment 3_1 may also executes a process of canceling the reservation or changing the reservation time.

[0136] The data transmission systems Sdt_3 and Sdt_2 may be combined together, and therewith, the user may receive services from the shop, or make purchases thereat with no cash payment.

[0137] In the third embodiment, a single data terminal equipment 2_3 is presumed for convenience to perform both data communications of FIGS. 23 and 8. This is not restrictive, and two of the data terminal equipment 2_3 physically differed from each other may be provided, and one may be in charge of data communications of FIG. 23, and the other data communications of FIG. 8.

[0138] Also, in the above, in the case where the data terminal equipment 3_3 guides the user to the shop, the data terminal equipment 2_3 on the shop side may provide the user any bonus which is considered better than the one in the bonus-attached file *Fbonus3*.

[0139] Also in the above, responding to the request *RSsd3* from the data terminal equipment 3_3, the WWW server 1_1 may search for any bonus-attached file *Fbonus3* whose bonus is most advantageous for the user, and the found bonus-attached file *Fbonus3* may be forwarded back to the data terminal equipment 3_3.

[0140] While the invention has been described in detail, the foregoing description is in all aspects illustrative and not restrictive. It is understood that numerous other modifications and variations can be devised without departing from the scope of the invention.